

AMATEUR RADIO

MARCH
1947

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

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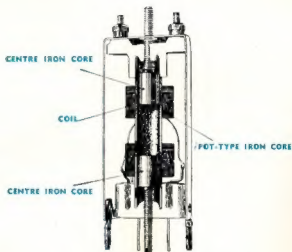
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EDITORIAL



During the recent war most of us had some experience of a new and sometimes disturbing factor in our everyday existence, a factor which went under the name of "Rationalisation." This term covered all kinds of things from two-color jam labels to a monotonous uniformity in the flavor of the kids' ice-creams. Whether or not all the things which were done under the name of "Rationalisation" were justified is an argument which we do not propose to enter into here, but there can be no doubt that the basic idea was right, that the end, that of making better use of the available manpower and materials, was substantially achieved.

The idea of rationalisation was forced upon this country by the greatest crisis in its history. The crisis has now passed (or has it?) but rationalisation is to some extent still with us. Once more, we do not propose to get ourselves into a political argument, but we have all come to realise that in some directions a little rationalisation is a good thing, inasmuch as it enables us to do more with limited resources.

We have been wondering recently whether Amateur Radio is perhaps in need of a little voluntary rationalisation. To-day we are faced with problems which in 1939 seemed rather re-

mote to most, anyway so far as we in this country were concerned.

Take our DX bands for instance. We have no more Kcs. in those bands today than we had in 1939, in fact in the popular 7 Mc. band we have for the moment a hundred less, but at the same time we are faced with greatly increased occupation of those bands. The answer must sooner or later be rationalisation of our methods of using those bands, perhaps in the form of sub-bands for Phone and CW, or perhaps a prohibition on short-distance contacts, or maybe other measures which we have not thought of yet. But whatever we do, we must do something effective and we must do it soon.

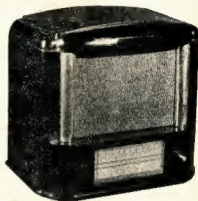
As we all know by now, there are two kinds of rationalisation, the voluntary kind and the other kind. It seems that the voluntary kind is to be preferred. Let us all do some very serious thinking about this problem so that we can find the right solution, and thus make our bands more enjoyable to use. We might also by this means give other users of the air less justification for their oft-repeated contention that the Amateurs are wasting useful space in the spectrum.

A. H. C.

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DIRECT DISC RECORDING

PART V.—THE CUTTING STYLUS

(Based on a Lecture delivered to the Sound Recording Institute of Australia by Mr. L. T. Garrioch)

Readers who have been following this series of articles will have noted that an attempt has been made to review each component in the Recording Chain in turn, and that only two items require to be dealt with before that chain is complete. These are the Cutting Stylus and the Recording Disc, and the purpose of this chapter is to consider the first-named in the light of some of the more important features only, as a full review of the subject would fill many pages.

Cutting Styli are essentially small tools which are clamped to the vibrating armature of the recording head, and should behave with a true cutting action similar to those used on a lathe. Their shape is illustrated in Figure 1, and for the normal range

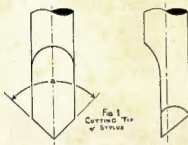


FIG. 1
CUTTING TIP
OF STYLUS

of direct recording discs the angle (a) is about 90 degrees. A small radius is sometimes provided at the tip in order that a rounded bottom is imparted to the resulting groove in the record, and it is claimed that this refinement tends towards more reliable performance as a sharp tip is likely to be more fragile. Both sharp and radiused points are in general use, however, and much depends upon the recordist's own experience and equipment in deciding which is preferable.

The first requirement of a stylus is that it be as sharp as possible along the cutting edges, and this in turn demands that all the surfaces be

highly polished or lapped after grinding. Any dullness of the cutting edges will produce noisy grooves, and impair the resulting signal-noise ratio during playback, and if the condition should be so bad as to be bordering on actual "bluntness," considerable difficulty in cutting may be expected. The second requirement is that it be rigid, in order that it will impart the high-frequency undulations to the disc. In this respect, the length of the shank is important, and should be chosen to suit the particular cutting head employed, so that not more than about $\frac{1}{4}$ -inch projects from it when tightly clamped in position.

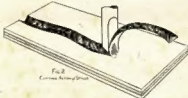


FIG. 2
CUTTING ACTION OF STYLUS

Figure 2 illustrates the action of cutting, and it will be seen that a continuous chip or "swarf" is produced. There is a certain amount of surface tension present in the uncut disc which is released when cutting, and this causes the "swarf" to shrink slightly as it leaves the disc, and to gather in a circle just inside the stylus track. Various methods are used for controlling the "swarf" so that it does not become entangled with the stylus. These range from suction and blowing devices in commercial and the more sophisticated amateur setups, to a humble soft-haired paint brush in the general run of installations. There are also some patented devices which can be purchased for the purpose. Generally speaking, the paint brush in practiced hands is quite satisfactory, and has the advantage that it cannot develop technical faults at a critical moment. A suitable choice is one which is about one-inch wide, and having soft bristles about $\frac{1}{4}$ inches long. There are certain adjustments which can be made to ensure that the "swarf" is thrown well clear of the stylus, and these will be referred to later.

In the case of Cellulose Nitrate coated discs which are most commonly used for instantaneous recording, a tendency is often met for the "swarf" to appear to be "magnetised,"

and to cling to the stylus during cutting, causing it to chatter or jump clear of the disc. This is due to an electrostatic charge being generated by the friction of cutting, and is most likely to occur with brand new discs which have been carefully packed in sealed containers. The "sealed container" practice for storing discs is an excellent method of preserving them against the ravage of dust and repeated changes of humidity, and should be encouraged, and the true solution of the difficulty is to seek a method of dissipating the charge as quickly as it is produced.

Tinsel streamers connected to the frame of the turntable system and playing on the surface of the disc are rarely satisfactory, and can give rise to tangling of the "swarf." The usual practice is to rub the disc surface lightly before cutting with a weak aqueous soap solution which is electrically conducting, taking care to run it well in to the centre so that the clamping boss over the centre pin can make contact with it. In normal circumstances, the chances of securing discs which are so fresh that this charge effect is troublesome are not great, and as a rule there is sufficient moisture adhering to the coating to cause it to dissipate.

It should be noted that when cutting the spiral from inside to out, the presence of such charge effects will not cause trouble because the stylus is continually moving away from the adhering swarf. The effect is also markedly less when cutting at 33.3 r.p.m.

The depth of groove cut in the disc is all-important, and special care must be taken to ensure that it is correct. Usually it lies between 0.0015-inch and 0.0025-inch. Less than 0.0015-inch will give considerable trouble during playback, while any attempt to exceed 0.0025-inch will promote vertical chatter and run the risk of damaging the stylus. There are two methods of gauging the depth of cut—the first being by examination of the swarf, which is usually said to be correct when its thickness is about that of human hair. Dextrous fingers, patience, and a micrometer can give the answer more correctly in "thous." The second method is by examination of the grooves with a microscope or magnifying glass, and estimating the groove-width at the surface in relation to the pitch of the grooves as produced by the traversing mechanism. For a 90-degree stylus cutting point, the depth of cut will be exactly half of the surface groove-width, although a radiused point will modify this slightly. For groove pitches between 100 and 130 lines per inch the correct depth of cut will give equal widths to adjacent grooves and "lands." (Note: The "land" is the

uncut portion of the disc between successive grooves.) Below 100 lines per inch, the groove-widths are about $2/3$ of the width of lands. These two cutting conditions are usually spoken of as "50-50" and "40-60" respectively, to indicate the relative proportions between groove and land.

Adjustment of groove-depth is made by varying the resultant downward pressure of the cutting head on the disc, either by means of a counter-balance weight, or with an adjustable spring. As mentioned earlier, this pressure is approximately 37 grammes for the average disc.

The life of a stylus is obviously governed by the wear-hardness of the material of which it is made, the end-point of its usefulness being when the cutting edges become dulled sufficiently to yield a noisy groove. Three materials normally used are steel, stellite, and sapphire, the latter two usually being a small chip secured to a metallic shank for insertion into the cutting head.

Their relative useful cutting lives are respectively about 30 minutes, 2 hours, and 6 to 10 hours, depending on circumstances. Their intrinsic hardness also has a large bearing on the high-frequency response, and for highest quality work the sapphire is the invariable choice. Unfortunately its relative fragility (and price) calls for the tenderest of care, and the aspiring recordist is recommended to stick to the more humble steel and stellite until he has well and truly perfected both his equipment and technique.

The natural wear of a stylus first becomes apparent at the surface line of the disc, and extends for about 0.001-inch below. Some authorities attribute this effect to variation in disc hardness from the surface inwards on account of varying surface tensions throughout the coating material. However, this dulling effect at the top of the groove walls may reach such proportions that a raggedness is produced where the playback needle will ride, and can cause the appearance of excessive scratch in the reproduction.

Periodic inspection of styli by means of a microscope of about 40 to 60 diameters magnification is recommended if such possibilities are to be avoided. Styli which show signs of dulling can be returned to the manufacturers for resharpening.

While examining a stylus in this way, it is also good practice to have a look at the tip in order to ensure that it is free from any defects caused by chattering or accidental damage in use. Although it is not normally subject to as much wear as the sections immediately above, any deformation can give rise to extraneous modulation of the groove. This usually

takes the form of a "hill and dale" or vertical modulation along the lines shown in Figure 3, and may be of sufficiently high frequency as to appear in the reproduction as a "hiss." However it may be low enough in the musical scale as to take the form of a whistle. If the tendency is slight, the effect will occur only at the bottom of the grooves, but if not, the side walls may also be impaired, which is the usual condition for it to be heard as a whistle. Close examination of the grooves with a microscope and suitable illumination will usually reveal the presence of this effect.



It is now necessary to add a few words about the adjustment of the stylus relative to the recording disc in order to secure optimum results. The "face" of the tool should be square on to the incoming disc material, and this is usually well catered for by the provision of a "flat" on the stylus shank where the clamping

angle made by the cutting face relative to the disc surface, and is sketched in Figure 4. The correct angle is 90 degrees, or a few degrees under it, as shown in (b). If it is greater than 90 degrees, as in (a), a digging-in action is set up, and a noisy, bouncing cut results. (The effect can be disastrous to a sapphire stylus.)

A dragging angle as in (c) will give a noisy, rough cut, and possibly a whistle when playing back. There is also the likelihood of the swarf coming off in a dry powdery condition instead of a clean uniform thread, indicating that the groove is being "torn" rather than cleanly cut in the disc material. The correct setting can be readily checked by noting the reflection of the stylus (side view) in the high polish of the disc surface, when a 90 degree condition will be revealed by the cutting face and its reflection lying in a straight line as in (b). It should be noted that these remarks do not apply to the position of the cutting head itself, but to the face of the stylus only. Certain makes of styli have an undercut face as sketched in (d), where the axis of the stylus is not parallel to the plane of the face. The angular setting, however, is still made with regard to the cutting face as shown.

It is often a convenience to provide means for varying the cutting angle slightly while the recording is in progress, as there may be a slight tendency to whistle if a hard spot in the

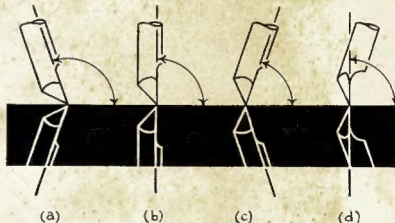


FIG 4 - ADJUSTMENT OF CUTTING ANGLE

screw bears. There are, however, two further adjustments which must be made by the recordist before satisfactory cutting conditions can be achieved. The first of these is the

disc is encountered. The most common and probably the most satisfactory way of doing this is to provide means on the carriage of the

Continued on Page 22

1946 W.I.A. INTERNATIONAL DX CONTEST

Although the DX Contest held last November could not be classed as the outstanding success of previous years it did provide a loosening-up effect for the DX boys. There were several causes for the low number of entries. Not the least of which were the generally unsettled conditions of the Ham bands at the time and the difficulty of sufficient forward publicity with other countries. Still, in spite of these drawbacks, we have scores of letters from Hams who say they enjoyed themselves and are looking forward to the next "big do" in October this year.

Our heartiest congratulations go to VK2EO, VK2ADT and VK2DG as well as to Eric Trebilcock BERS-195 who topped the Open, 28 Mc., 14 Mc. and receiving sections respectively for Australia. We feel that VK2 will not be allowed to get away with the prizes next contest!

The bulk of the overseas logs clearly indicate that they had been submitted purely to enable our boys to get the benefit of points scored. To those Hams who did this we extend our thanks and we sincerely appreciate their co-operation. The same goes to the R.S.G.B., A.R.R.L., and all other Radio Societies who co-operated to the fullest extent in publicizing the Contest.

One serious difficulty has arisen and that is the allocation of the prizes generously donated by some of our worthy advertisers. Through a lack of entries in as many sections as we had hoped for we have trophies unawarded. The winners will be given a choice of prizes and we trust our donors will permit us to hold the other awards over for our next Contest.

AUSTRALIA TRANSMITTING SECTION

Open

VK2EO	7164	VK2ADT	1980
VK2JX	6762	VK6RU	1500
VK2RA	5265	VK3KX	1488
VK3KX	5115	VK5JS	1098
VK2QL	4572	VK3HT	345
VK2YL	3600	VK5LC	330
VK2ZC	3564	VK6RL	3
VK6KW	2013		

28 Mc.

VK2ADT	1908	VK3PG	492
VK2ADE	1710	VK5MP	465
VK2YL	1236	VK2AHM	414
VK2JX	975	VK5WG	408
VK3KX	960	VK2ZC	369
VK2RA	900	VK3OE	351
VK5KG	720	VK3ABA	66
VK3YV	615	VK3DW	18
VK2QL	564		

14 Mc.

VK2DG	1710	VK7LJ	1296
VK3KX	1638	VK3CN	1044
VK2JX	1638	VK4TY	828
VK2ZC	1638	VK3GU	774
VK2AHA	1512	VK4HR	735
VK2DA	1440	VK4RC	720
VK2QL	1386		

RECEIVING SECTION

Call Sign	Section	Score
BERS-195	Open	1836
VK3-ERS	Open	1728

OVERSEAS

Country	Call	Section	Score
Mexico	XELIA	14, 28	1404
Argentina	LAUTAZ	14	870
Neth'lands	PA000	28	330
Hawaii	K6CGK	14	756
	KH6DD	14, 28, 7	1995
C'slovakia	OKIAW	28, 14	39
	OKICX	14	30
	OK1FF	14, 28	411
Canada	VE1EP	Open	60
	VE8AO	Open	126
Swit'land	HB9FJ	14	36
Alaska	KL7EZ	14	3
Chile	CE4AD	14	216
Macas	CR9AN	14	630
India	VU2LR	28	954
Sweden	SM3UT	Open	6
S. Rhodes	ZE1JB	28	81
S. Africa	ZSSU	14	450
U.S.A.	W3BES	Open	1650
	W9AEH	Open	1539
	W5LEC	Open	1419
	W2BHW/8	Open	1368
	W6AM	28	108
		14	672
		Open	1128
	W6PNO	Open	816
	W2BBK	14	830
	W2COK	28	240
	W8UZX	28	204
	W1BHI	Open	72
	W3GHD	Open	36
	W0MPK	28	36
	W0CFB	Open	18
	W8DA	Open	18
G. Britain	G8CJ	Open	2079
	G8IG	Open	666
		28	225
		14	300
	G8QZ	14	330
	G3QD	28	192
	G5MY	14	90
	G2FKO	28	22

RECEIVING SECTION

Country	Call	Section	Score
G. Britain	BRS-1535	Open	1170
C'slovakia	OK-RP-709	Open	1116
Swit'land	HB9RLA	Open	915

HIGHLIGHTS

LU7AZ gave many VKs a good opportunity for a South American contact on 14 Mc. He worked 58 stations in all.

KH6DD pushed up a fine score of 4500 points with 1 KW input.

It was good to hear old W6AM on the job again. Don doesn't say how many watts go to a Californian kilowatt these days!

W2BBK says he would have done better if W2NRM had returned the 8JK beam he borrowed prior to the contest. It is a matter of a "signal squitter" being turned into a "points snatcher!"

William Ely, BRS-1535, says that there are a lot of lousy notes in Europe, but that the VK boys are good.

G8IG reported having lots of fun and is warming up to the next Contest in October.

G8CJ, the winner of the U.K., made some useful checks against his logs during the 1935/6 contest and finds that 14 and 28 Mc. bands performed very closely to the 1946 conditions with the exception that they opened up about an hour earlier. G8CJ used a 200 feet vee aerial directed on VK.

Many participants stated that they like the idea of a multiplier by Continents instead of countries. Anyhow, these days who can define a country? VK3ML would like to hear some views on this contentious feature.

VK5FL turned in a fine log but too late for judgment.

VK6 boys had a tough time with rail strikes and power restrictions—lets hope all these blow over before October.

VK5KG's effort with a 6C6-37 type receiver was a credit and should prove to the younger boys that DX is not a measure of the number of bottles in a receiver—some say it is 90% operator and 10% receiver.

VK4RC got his W.A.C. in one night with a new aerial—a centre fed doublet vertical—and it proved a winner for the rest of the test.

VK2DA was not up to his usual DX Contest standard through family illness half way through—hope things are better in October Harry.

VK2EO tells us that this was the best Contest he has ever been in—a Continent multiplier is the shot he says.

Well boys, that is all for the 1946 Contest. Get your gear and pencils sharpened up for the big 1947 VK-ZL trials in October.

We know that you all join with us in stating that our friends, the advertisers who supported the Contest, helped to make the test the enjoyable one it turned out to be and we thank them for it.

VK3ML, Contest Manager.

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TYPE 1305 — CRYSTAL CONTROLLED —
FREQUENCY RANGE 30-40 MC.



Includes Inter-Comm. for 2 operators. Size.—12" x 9-1/8" x 8-1/2"
Power Output.—1/2 watt.
Freq. Deviation.—15 K.C. Tubes include—
Audio Response— 14W7—RF amp.
3DB 300-3000 cycles 14W7—1st Det.
Operates off 12 Volt D.C. 14C7—Crystal Osc. — Multi-
Dynamotor. plier.
Power Output, 12/14 volts, 1457—2nd Det. Crystal Osc.
4 amps. (12 V. accumulator) 14W7—1st Limiter.
Output Impedance, 500 ohm 14W7—2nd Limiter.
to feed 2 headsets. 7A6—Discriminator.
Control. Direct. 7A6—Squelch Rectifier.
Weight.—20 lbs. 14F7—First Audio Squelch.
14C5—Audio Output Amp.
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Guaranteed new in sealed Cartons £15/15/0
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PROPAGATION PREDICTIONS FOR MARCH, 1947

The following information is taken from the Radio Propagation Bulletin for March 1947, No. A.R.P.C. A27.

Zone E.—Latitude 10° South (Nth. Queensland, Northern Territory, Nth. Western Australia):—

Maximum useable frequency 58 Mc. (2500 miles' skip).

7 Mc.—With the exception of a short period at 0500 hours when skip is 250 to 300 miles, this band does not offer many possibilities.

14 Mc.—At midnight skip is 600 miles, rising to about 1,400 miles at 0500 hours, then decreasing steadily to zero at 1500 hours. From 1500 hours to midnight an increase to 600 miles is noticed.

28 Mc.—At midnight skip on this frequency is 200 miles, rising to 2,500 miles at 0200 hours. After this time, the band becomes unsuitable for long distance working until 0900 hours when skip is once again 2,500 miles, decreasing to about 800 miles at 1500 hours, and rising to 2,000 miles at midnight.

50 Mc.—A study of the charts promises a return of the conditions which prevailed on this band during November of last year. Watch for a peak of 2,000 to 2,500 miles' skip

which should appear between the hours of 1300 and 1600.

Zone E.—Latitude 20° South (Sth. Queensland, New South Wales, Sth. Australia, Southern W. Australia):—

Maximum useable frequency is 46 Mc.

7 Mc.—Useless until 0300 hours when a peak appears which rises to 500 miles at 0500 hours and fades out again at 0630 hours.

14 Mc.—Skip at midnight is 800 miles. At 0200 hours an increase, which rises to 1,500 miles at 0500 hours, is noticed. From 0500 hours to 1400 hours a steady decrease to about 300 miles is seen, then an increase to 800 miles at midnight.

28 Mc.—Opens up at 0700 hours with skip of 2,500 miles. This decreases to about 1,200 miles at 1400 hours, then rises to a maximum of 2,500 miles at 1900 hours, after which time the band fades out.

50 Mc.—Although the maximum useable frequency is given as 46 Mc., there may be a possibility of something doing on this band around 1500 hours.

Zone E.—Latitude 30° South (Victoria, Southern N.S.W., Southern S.A., and Southern W.A.):—

Maximum useable frequency is 38 Mc.

7 Mc.—At midnight skip is about 400 miles, rising to 800 miles at 0330 hours, then fading out entirely at 0700 hours.

14 Mc.—Skip at midnight is 1,500

miles, rising to 2,500 miles at 0330 hours, then fading out until 0600 hours. From 0700 hours until 2100 hours, skip is fairly steady at 500-600 miles.

28 Mc.—At 0800 hours a period of 2,000-2,500 miles' skip commences and lasts until 2000 hours. Both prior to and following this period skip is not present.

Zone E.—Latitude 40° South (Tasmania):—

7 Mc.—Except for a peak of 500 miles at 0500, skip is not present.

14 Mc.—At midnight skip is 1,200 miles, rising to 2,000 miles at 0500 hours, then decreasing to 500-600 miles at 0900 hours. This period of 500-600 miles' skip, lasts until 1800 hours when a steady increase to 1,000 miles at midnight takes place.

28 Mc.—Nothing until 0900 hours when a period of 2,500 miles' skip commences. This period lasts until 2000 hours, then fades out entirely.

The foregoing information is given for transmissions by way of the F2 layer. It should be noted that the state of ionisation of the E layer often makes possible the use of higher frequencies for distances of 1,000 miles than can be used for distances of 1,500 miles via the F2 layer.

Our copy of the Radio Propagation Bulletin A.R.P.C.-A27 by courtesy of the Australian Propagation Committee of the Radio Research Board of the Council for Scientific and Industrial Research.

W.A.Z. ZONE BOUNDARIES DEFINED

"CQ," the successor to the old "Radio," announces the resumption of W.A.Z. honor roll listing in the editorial pages of the magazine. In addition a handsome certificate, suitably inscribed, will be awarded to any station proving two-way communications with each of the forty established zones. Certificates will be numbered as issued.

In determining zone boundaries originally, it was admitted that no two persons in the world would probably make up exactly similar lists. Careful attention was given to topographical maps, calls heard lists, and similar factors in compiling the zone lists. For convenience in determining the zone in which a distant station may be located, zone lines have in most cases been made to coincide with political or call area boundaries, even where slight departures from natural geographical boundaries were necessitated. No consideration has been given to the number of amateur stations which may be located within a particular zone, as this is a factor of no permanence. In the post-war period after much debate and discussion, it was decided to let the original zones stand intact. This means that some political and call area boundaries will have been altered by the war and if, after the peace conference minor re-adjustments are called for, they will be made.

The plan has been laid out as carefully as possible without reference to any particular country or portion of a country. The number of zones on each continent is roughly proportional to its area. In the zone list some overlapping units are included, that is, many places listed are subdivisions of others also listed. This has been done purposely because sometimes one of the names is omitted in the postal address given on QSL cards.

For listing in the new W.A.Z. honor roll it is only necessary to drop a note to the DX Editor or to CQ Magazine, 342 Madison Ave., N.Y. 17. Total pre-war and post-war zones and countries are desired, although listing will be in order of post-war zones worked.

The foregoing and the list defining the zone boundaries has been reprinted from "CQ" in the belief that Australian Amateurs will be interested.

Zone 1—Northwestern Zone of North America:—

Alaska	KL7
Yukon (part of)	VE8
Canadian Northwest Territories (part of)	VE8

District of Mackenzie	VE8
District of Franklin	VE8
Islands west of 102° W., including Victoria, Banks, Melville and Prince Patrick.	

Zone 2—Northwestern Zone of North America:—

Canada, that portion of Quebec (part of VE2) north of an east and west line drawn along and extended from the southern boundary of Labrador.

Canadian Northwest Territories (part of) VE8

District of Keewatin.

District of Franklin east of Long. 102° W., including Islands of King William, Prince of Wales, Somerset, Bathurst, Devon, Ellesmere, Baffin, and the Melville and Boothia Peninsulas.

Zone 3—Western Zone of North America:—

British Columbia (part of VE7)

W7 except Wyoming and Montana

All W6.

Zone 4—Central Zone of North America:—

All VE3, VE4, VE5, VE6.

W5, W9 and W0.

Wyoming and Montana (part of W7).

Ohio (part of W8).

Tennessee, Alabama and Kentucky (part of W4).

Zone 5—Eastern Zone of North America:—

All VE1, VO, W1, W2, W3.

VE2 (Quebec) south of line mentioned in Zone 2.

W4 except Tennessee, Alabama, and Kentucky.

W8 except Ohio.

Bermuda VP9

Swan Island KD4

Zone 6—Southern Zone of North America:—

Mexico XE

Zone 7—Zone of Central America:—

Honduras HR

British Honduras VP1

Guatemala TG

Costa Rica TI

Nicaragua YN

Panama HP

Canal Zone KZ5

Zone 8—West Indies Zone:—

Cuba	CM
Puerto Rico	KP4
Virgin Islands	KV4
Cayman Islands, Jamaica, Turks and Caico's Islands	VP5
Bahamas	VP7
Barbados	VP6
Haiti	HH
Dominican Republic	HI
Dominica, St. Lucia, Antigua, St. Kitts-Nevis	VP2

Guadeloupe	FG8
Martinique	FM8
All Greater and Lesser Antilles except Bermuda and those listed in Zone 9.	

Zone 9—Northern Zone of South America:—

Colombia	HK
Venezuela	YV
Dutch Guiana	PZ
French Guiana	FY
British Guiana	VP3
Trinidad	VP4
Curacao	PJ
Tobago	VP4
Grenada	VP2

Zone 10—West Central Zone of South America:—

Ecuador	HC
Peru	OA
Bolivia	CP
Colon or Galapagos Archipelago	HC

Zone 11—East Central Zone of South America:—

Brazil	PY
Paraguay	ZP

Zone 12—Southwestern Zone of South America:—

Chile	CE
-------	----

Zone 13—Southeastern Zone of South America:—

Argentina	LU
Uruguay	CK
Falkland Island	VE8
South Shetland Islands	VE8
Georgia Island	VP8

Zone 14—Western Zone of Europe:—

Portugal	CT1
Spain	EA
Andorra	PX
France	F
Switzerland	HB
Belgium	ON
Luxembourg	LX
Saar	EZ
Germany (except East Prussia)	D
Denmark	OZ
Sweden	SM
Norway	LA
Great Britain	G
North Ireland	GI
Scotland	GM
Wales	GW
Channel Island	GC
Irish Free State	EI
Netherlands (Holland)	PA
Azores Islands	CT2
Faeroe Islands	OY
Gibraltar	ZB3
Monaco	PX

Zone 15—Central Zone of Europe:—

Italy	I
Albania	ZA
Austria	OE
Liechtenstein	HE
Poland	SP
Finland	OH
Latvia	YL
Lithuania	LY
Estonia	ES
Czechoslovakia	OK
Yugoslavia	YU
Corsica	SV
Sardinia	
Hungary	HA

Malta	ZB1	Aegean Islands	SV	Zone 23—Central Zone of Asia:—	
Sicily	J	Syria	AR	Chinese Republic, following por-	
San Marino		Palestine	ZC6	tions only:	C (XU)
Polish East Prussia		Transjordan	ZC1	Tibet	AC
Zone 16—Eastern Zone of Europe:—		Cyprus	ZC4	Sinkiang (Chinese Turkestan)	
European portions of U.S.S.R. in-		Zone 21—Southwestern Zone of Asia		Tannu Tuwa (Tannou Touva)	
cluding European portion of So-		Saudi Arabia:—		China Proper (Kansu Province	
viet Russia, White Russia or Bel-		Saudi Arabia (Hedjaz, Nejd)	HZ	only)	
lorussia, Ukraine, and Novaya		Yemen		Outer Mongolia	
Zemlya. UA, UB, UC		Oman		Inner Mongolia (except Chahar	
Zone 17—Western Siberian Zone of		Aden	VS9	Province)	
Asia:—		Asir		Zone 24—Eastern Zone of Asia:—	
Asiatic U.S.S.R.	UA	Iraq (Mesopotamia)	YI	China Proper (except Kansu Prov-	
Ural		Afghanistan	YA	ince	C (XU)
Kirghiz		Persia	EP	Inner Mongolia (Chahar Province	
Tadzhik		India (Baluchistan only)	VU	only)	
Turkmen		U. S. S. R. (Transcaucasia only,		Manchukuo (Manchuria)	MX
Uzbek		Georgia, Armenia, Azerbaijan)	UA	Kwangchow	
Kara Kalpak		Kuweit		Macao	CR9
Kazak		Behrein Island	VS8	Hong Kong	VS8
Zone 18—Central Siberian Zone of		Zone 22—Southern Zone of Asia:—		Darien	
Asia:—		India (except Baluchistan and	VU	Japan (Taiwan or Formosa only)	J9
Buryat Mongol	UA	Burma)		Zone 25—Japanese Zone of Asia:—	
Oyrot		Assam		Japan (except Taiwan or For-	
Siberian Krai (Eastern and West-		Sikkim		mossa)	J
ern).		Ceylon	VS7	Chosen (Korea)	J8
Zone 19—Eastern Siberian Zone of		Nepal		Zone 26—Southeastern Zone of Asia:	
Asia:—		Mahe		Burma	XZ
Yakutsk	UA	Maldives Islands	VS9	Siam	HS
Far Eastern Area or Dalnevostch-		Laccadive Islands	VS9	French Indo-China	FI
nyl.		Karikal		Andaman Islands	VU
Zone 20—Balkan, Asia Minor Zone:—		Bhutan		Zone 27—Philippine Zone:—	
Rumania	YR	Pondichery		Philippine Archipelago	KA
Bulgaria	LZ	Goa	CR8	Guam	KG6
Greece	SV			Yap	
Crete	SV				

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ABAC
**Standard
Receiver**

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of case 11 inches.
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THE BAROMETER OF WORLD OPINION



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Lenses over an
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Distribution Crown Street, Glebe, N.S.W.

Caroline Islands						Eritrea	16
Marianas Islands	KB6					Zanzibar Islands	
Islands east of Philippines, west of						Socotra Islands	
Long, 163° E., north of Lat. 2°						Madia Islands	
N., and south of a line from 153°							
E., 40° N. to 131° E. 23° N.							
Zone 28—Malayan Zone of Asia:—						Zone 38—Southern Zone of Africa:—	
Malay States (Federated and Non-						Union of South Africa	ZS
Federated)	VS2					Southern Rhodesia	ZE
Johore						Swaziland	ZS
Straits Settlements	VS1					Basutoland	ZS
Malay Archipelago, including Neth-						British Southwest Africa	ZS3
erlands Indies (Dutch East In-						Bechuanaland	ZS
diés)						Tristan de Cunha Island	ZD6
Java	PK					Gough Island	
Sumatra	PK4					Bouvet Island	
British North Borneo	VS4						
Sarawak	VS5					Zone 39—Madagascar Zone:—	
Papua	VK4					Madagascar	FB8
New Guinea	VK9					Reunion Island	FR9
Borneo	PK5					Seychelles Island	VQ9
Solomon Islands	VR4					Admiralty Island	
Timor Islands	CR10					Mauritius Island	VQ8
Portuguese East Indies	CR8					Zone 40—North Atlantic Zone:—	
Islands between Lat. 2° N. and						Greenland	OX
11° S., and west of Long 163° E.						Iceland	TF
Zone 29—Western Zone of Australia:						Svalbard (Spitzbergen)	
Australia	VK						
Western Australia							
Central Australia							
Zone 30—Eastern Zone of Australia:							
Australia	VK						
Queensland							
New South Wales							
Victoria							
Tasmania	VK7						
South Australia							
Islands south of Lat. 11° S. and							
west of long. 153° E.							
Zone 31—Central Pacific Zone:—							
Hawaiian Islands	KH6						
Ellice Islands	VR1						
Gilbert Islands	VR1						
Baker, Howland, American Phoe-							
nix Islands	KB6						
Midway	KM6						
Palmyra Group, Jarvis	KP6						
Wake Island Group	KW6						
Johnson	KJ6						
Islands between Lat. 11° S. and							
40° N., and between Long. 163°							
E. and 140° W.							
Zone 32—New Zealand Zone:—							
New Zealand	ZL						
Loyalty Islands							
Tahiti	FO						
Fiji	VR2						
New Hebrides	FU8, YU						
Samoa	KS6						
New Caledonia	FK						
Pitcairn Islands	VR6						
Chatham Islands							
Islands south of Lat. 11° S. and							
between Long. 163° E. and							
120° W							
Zone 33—Northwestern Zone of							
Africa:—							
French Morocco	CN8						
Spanish Morocco	EA9						
Rio de Oro							
Tunisia	FT4						
Algeria (Northern & Southern)	FA						
Ifra							
Madeira	CT3						
Canary Islands	EA8						
Zone 34—Northern Zone of Africa:—							
Libya							
Egypt	SU						
Anglo-Egyptian Sudan	ST						
Zone 35—Western Zone of Africa:—							
French West Africa	FF8						
Nigeria	ZD2						
Ivory Coast	ZD4						
Gambia	ZD3						
Cape Verde Islands	CR4						
French Guinea							
Liberia	EL						
Portuguese Guinea	CR5						
Dahomey							
Asanti							
Sierra Leone	ZD1						
Senegal							
Gold Coast	ZD4						
French Sudan	FD8						
Togoland	FD8, ZD4						
Zone 36—Equatorial Zone of Africa:							
Angola (Portuguese West Africa)							
	CR6						
Cameroons	FE8						
Spanish Guinea							
French Equat. Africa	QF8						
Belgian Congo	QF5						
Northern Rhodesia	VQ2						
Cabinda							
Rio Muni							
Gabon							
St. Helena Island	ZD7						
Ascension Island	ZD8						
Zone 37—Eastern Zone of Africa:—							
Mozambique (Portuguese East							
Africa)	CR7						
British East Africa							
Kenya	VQ4						
Uganda	VQ5						
Tanganyika	VQ3						
Nyasaland	ZD8						
Ethiopia (Abyssinia)	ET						
Italian Somaliland							
British Somaliland	VQ6						
French Somaliland	FL9						

WINDING COILS WITH SPACED TURNS ON UNTHREADED FORMERS

Wind wire of smaller and appropriate gauge on with and between turns of winding proper. If winding is sufficiently tight spacer wire can be removed before applying "dope." Alternative schemes are either to dope the former lightly before winding or merely dope coil at intervals after winding, allow dope to dry before removing spacer wire.

STORING CO-AXIAL CABLE
Prior to returning surplus co-axial cable to the shelf after cutting, the end should be sealed with suitable compound or dope in order to prevent moisture and corrosion creeping along the conductors.

INSULATORS

Large strain type, egg shaped

16/6 dozen

INSULATORS

Small Egg Insulators

3/6 dozen

INSULATORS

Standoff Insulators, 1" high with bolt 1/6 each

Standoff Insulators, 1" high with banana socket 1/8 each

Miniature Tubes for high frequencies.

6C4 . 25/- 6AG5 . 30/- 6J6 . 32/6

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FEDERAL QSL BUREAU

VK3RJ QSL MANAGER

PY2AL, J. Levy Silva, Box 286, S. Paulo, Brazil, has come to light with cards confirming pre- and post-war contacts. Everything comes to those who wait—long enough.

One of the numerous cards from PY2AL is addressed to VK3AR confirming a 14 Mc. CW contact on September 2, 1946, at 0500 PY time. The correct owner of the card may have some on application to this Bureau.

A number of applications for W.A.C. certificates have been submitted and recommended during recent months. Stations making application for this award are reminded to submit their confirmations either direct to the Federal QSL Manager or through their Divisional Secretary. After checking, the cards will be returned by the Federal QSL Manager direct to the applicant.

As the appointment of a successor to VK3RJ as Victorian QSL Manager has not yet been finalised, divisional QSL Managers and VK3 stations should continue to use the existing address: 23 Landale Street, Box Hill, E.11, Victoria, until further notice.

Writer has returned from an enjoyable and moderately successful prospecting holiday in the Blackwood district of Victoria. Although the humid spell "enjoyed" by Melbourne residents was avoided, a plague of March flies necessitated the constant wearing of gaiters and fly veil imperative during daylight hours while shirt sleeves had to be buttoned to the wrists. Even so up to 300 "contacts" a day were easily obtainable, the necessary confirmation being received at time of contact. The "Insectosphere" predictions proved valueless as the "DK" arrived one month earlier than predicted while the maximum usable wavelength proved to be one arms length.

Cards are on hand at the Victorian Bureau for the following VK3 metropolitan stations as at 13/2/47: VK3AB, AC, AE, AI, AO, AP, AT, AV, AAB, ABA, ABC, ABN, ACG, ACX, ADP, ADH, ADS, ADX, AES, AFD, AGE, AHB, AHX, AIG, AIJ, ALE, AJL, AJX, AKL, AKR, AKY, ALE, AOG, ARI, ARE, ARK, ARF, ASV, ART, ATH, ATM, CE, BD, BF, BT, BX, BZ, CC, CI, CO, CT, CU, DA, DC, DD, DX, DN, DP, DT, EC, ED, EG, EH, EJ, EK, EN, EO, ES, EV, EX, EZ, FE, FL, FM, FN, FP, FR, FS, FT, FV, FW, FY, FG, GG, GF, GT, GV, GX, HD, HI, HJ, HS, HV, IF, IK, IP, IT, IU, IW, IV, JZ, JE, JH, JJ, JT, JW, JY, KA, KB, KC, KL, KU, LA, LC, LL, LT, LZ, MD, MT, MU, MS, MU, MW, MX, NA, NB, NF, NL, OE, OV, OP, OZ, PA, PB, PE, PG, PI, PK, PM, PZ, PQ, QD, QE, QG, QI, QK, QL, QP, QQ, QR, RF, RR, RT, RV, RW, SB, SG, SK, SQ, SY, TE, TF, TH, TI, TQ.

FEDERAL NOTES

FEDERAL CONVENTION IN APRIL

The Annual Federal Convention of the Wireless Institute of Australia will be held in Melbourne at Easter. The Divisions of the Institute are now discussing the agenda items which will be decided at the Convention, and we hope you will go along to the Divisional meetings when Divisional opinions of items are sought.

We are happy to inform you that delegates will be present from all States, as we believe this is the satisfactory way to have a real expression of opinion from the individual Divisions.

TELECOMMUNICATIONS CONVENTION

A World Telecommunications Convention is to be held during April or May and the Wireless Institute of Australia is being represented there by the I.A.R.U.

The I.A.R.U. has been informed of the W.I.A. views and they coincide with those of the I.A.R.U.

W.A.S. CERTIFICATE

As announced last month, the W.I.A. is establishing a Worked All States Certificate for 50 Mc. and above. We now require a design for this Certificate and any Ham who has any artistic flair should send in a design. A prize will be offered the winning designer. Entries close at Melbourne on 31st March, so that the Federal Convention may decide the best design. Address your entries to Federal Executive W.I.A., Box 2611W, Melbourne. Now get cracking chaps!

NEW BAND

Australian Amateurs have now joined the select ranks of those permitted to use the "QRM" band, in other words the "Medical and Industrial Band"—27.185 to 27.455 Mcs. This should be a very interesting addition to the allocations which we already have. The terrible QRM which will sooner or later emanate from Medical and Industrial Equipment on this band will challenge the ingenuity of Amateurs, and much

TR, TU, TY, UC, UD, UE, UH, UJ, UK, UM, UO, UP, VA, VC, VD, VH, VM, VO, VQ, VS, VU, VZ, WC, WF, WO, WX, XA, XD, XG, XJ, XN, XS, XT, YC, YF, YH, YM, YS, ZB, ZD, ZG, ZH, ZJ, ZO, ZP, ZT, ZV.

Send a stamped envelope to the Bureau and help keep the files less congested. If any country members are included in above list please advise the Bureau.

good should arise from this aspect. We do not, however, share the opinion of certain very enthusiastic overseas magazines which seem to think that most of the hamburger and hot dog joints in the country will soon be operating on this band! Anyway, there it is, let us be sure that it is occupied without delay.

RESTRICTION REMOVED

We are pleased to announce that advice has been received from the Wireless Branch that the thirty minutes limit on contacts has been abolished. While the intention behind the introduction a few years ago of this restriction was undoubtedly a good one, we believe that its removal will be generally welcomed. We would like all Amateurs to note, however, that the remaining portions of Rule 84, i.e. the good advice contained therein relative to the undesirability of band-hogging still apply. The Wireless Institute has gained the abolition of this restriction in the interests of all Australian Amateurs, so show your gratitude by still keeping your contacts down to a reasonable duration.

V.H.F. OFFICERS

During the last month the Federal Executive has received notice of the appointment of a further two V.H.F. Officers, namely:—

South Australian Division:

Mr. R. T. Manuel, VK5RT,
59 Gordon Road, Prospect, S.A.

Tasmanian Division:

Mr. C. Walsh, VK7CW,
10 Osborne Ave., Sandy Bay, Hobart.

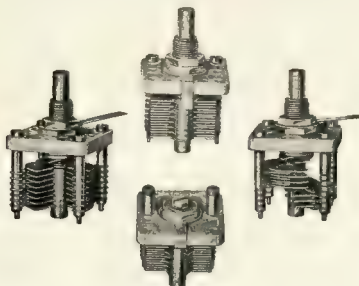
Members interested in V.H.F. activities in these Divisions should contact their V.H.F. Officer without delay.

NEW ZEALAND APPOINTMENT FOR PHILIPS EXECUTIVE

After more than 21 years' service with Philips Electrical Industries of Australia Pty. Ltd., Mr. Leighton Lord has been appointed Managing Director of Philips Electrical Industries of New Zealand Ltd. He will leave for Wellington this month.

Mr. Lord, who has been General Manager of Philips Electrical Industries of Australia for several years, has been very prominent in the electrical and radio field. Besides being a director of several companies, he was on the council of E.R.D.A., and was formerly president of the Illuminating Engineering Society of Australia (N.S.W.).

Mr. Lord's many friends throughout the Commonwealth will regard the promotion as well deserved and wish him every success in his new sphere.



EDDYSTONE presents a new range of **AIR DIELECTRIC TRIMMER CONDENSERS** for amateur and professional use. All metal parts are of heavily silver plated brass with ceramic insulation. Spindles are extended for ganging.

Cat. No.			Max. Capacity			Price
581	60	pF	..	6/5
582	60	pF	..	10/10
580	15	pF	..	9/6
584	34 x 34	pF	..	14/2
583	25 x 25	pF	..	13/5

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AUSTRALIAN FACTORY REPRESENTATIVES:

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51 WILLIAM STREET, MELBOURNE.

RAMBLINGS ON DX BANDS

Ray Priddle (VK2RA), in a letter, says by working PK5LK he raised his post-war DX score to 100 countries, and I daresay readers of DX notes will be interested.

Some of the choicest ones are VP8AD, UD6BM, PZ1RM, TF3A, VQ5JTW, ZA2D, AR1PC, T1NS, U18AA, ZB2B, ST2AM and PK6AX (Celebes). He did not record the

frequencies, because most seem to use V.F.O.s. these days.

He will not be very active for the balance of this year, as he is moving into a new house in about three weeks, and you probably know what that means. However, he is hoping the new QTH will be as good for DX as his present one. The main advantage of the present location is that a hill to the East makes it difficult to hear or work Ws! He hopes they all QSL so that he can get the Australian DX C.C. hi.

R. Campbell (VK4RC) jumps to the defence of DX conditions in Queensland. He says there was some interesting reading in last month's issue of what the VK3s and 5s were doing on the DX bands, so he thought he would drop a line and let you all know that they work DX up in VK4 too, by heck!

As far as is known at present, VK4HR is out in front, with 95 countries to his list, VK4EL not far back of him with 92, and 4KS has 73 up on the hook, whilst 4RC has 70 scalps to the belt. His best work to date has been a 4½ hour W.A.C. on 14 Mc.

Naturally 14 Mc. is the glamor band at the moment, with lots of nice juicy ones popping through. Some of the "not worked" ones are tit-bits like AC3SS, AC4YN, EP1AL, HZ1AB, XQ2G, and HC1FC.

Since 6th October, he has knocked off quite a lot including UA3CA, XZ2KM, UA3KAH, XAEG (Trieste), G8BC, PA0XE, F8EO, PA0XS, VS9AN, VU2BM, G8WI, G8KP, GW4CX, GW3ZV, VU2FY, VR2AA, CE4AD, VS7JB, G16TK (operating portable, he was), Y18C, PA0LR, PK1VHN, H89BS, UA9DP (in Ural Mts.), LU7AZ, CR9AN, XE1A, VQ3JHP, VS2BG, VS4BJ, OZ5HQ, ZS5U, VK4OS (Pt. Moresby), ZS9DU, VR4AA, PK3PL, KP4AN, XAFE (Santa Lucia, Naples Bay), KP6AB (Palmyra Island), UA0KAA, J16SAB, J1, VS7GH, HA4BA, ZS8GO, ZS6CC, ST2AM, F3MS, ON4VF, CO2FA, ZE1JJ, PK6HA, OZ7UW, CR9AG, VR5X, PK4KS, VQ2GW, ET1JJ, ZK1AA, VS4SR, TF3A, XE1FB, W6WDN/KW6 (Wake Is.), XZ2LY, U18AA (Tashkent), SM7PY, OZ7HM as well as a fistful of G, W, J, VS1, etc.

Some of the nicest ones before that date included ZD8A, CN8MI, EI9N, OK1FF, KL7AD (on 7 Mc.), VS3-4JH, W6ONK (Bikini Island).

He has done a fair bit on 28 Mc., some of which is included in this list. However, it is very patchy there now on 28 Mc. The other night it was coming in like 14 Mc. during a DX contest—but trying to land any of it was another story. 28 Mc. is due for a "renaissance" within the next few

weeks. Has been up on 7 Mc. too, and finds that the old band is still capable of some interesting work. That is if you can get rid of the hash of QRN that surrounds it at present.

4RC's rig is a 6V6 triet, 807 buffer and 801 final, running 35 watts on the final. Antennas in use are a vertical half wave doublet 14 Mc. and a half wave 7 Mc. matched impedance. Receiver is a revamped model of the Radiotron Junior, with an 1852 R.F. and 6K7 suppressor injected mixer, and 8K7 H.F.O.

FIFTY AND UP

VICTORIA

The writer of these notes (3NW) spent a fortnight in Adelaide since last month's notes were written and on his return was very busy for another couple of weeks. Hence the information given here is more the result of questions asked than personal observations and if any interesting data is found to be missing you are asked to overlook the omission!

Between the evening that the two VK7s were heard until the 22nd February, no DX was heard or worked. The whole month proved to be very flat and there appears to be no adequate explanation for this. As the boys say on the other bands "it must be conditions," that nebulous and unknown quantity that presides over the ultimate destiny of all short wave signals. One or two weak signals were heard by 31Z and 3HK but not identified. On 22nd February a VK7 was heard calling CQ and possibly 3DA but his call was not obtained and signals soon faded out. Predictions indicate a M.U.F. of 49 Mc. for March between Australia and some of the locations to the North, such as Okinawa and we have hopes of working some of these stations. Good work continues to be done in the Northern Hemisphere and we are about due for our share.

Newcomers to the band are as follows: 3HZ (Murray), of Warrigul, who heard several of the portable stations during the last field day and who is running 12 watts to an 807 on 50.15 Mc. with a horizontal dipole antenna. He has worked 31Z on several occasions and 3HK on two occasions. The latter receives him at R9 and other Melbourne stations should have no difficulty in contacting him. He is located about 60 miles from the city in a nice high position.

VK3AHC puts out a whale of a signal locally from his 813 which runs at 100 watts. However George is not altogether satisfied with the efficiency in spite of the fact that he has inductance tuning in the plate circuit—the 14 odd mmfd. capacity of the tube acting as the plate condenser. His antenna is a semi-vertical

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dipole, but materials are on hand for a beam. Pity our receivers then George! Frequency of 3AHH is 50.9 Mc.

3HD in Mordialloc is reported on and 3RO, 3OT, 3LW, 3MV and 3EH are now active. The latter station is running 50 watts to an 807, the complete line up being 6N7 Xtal Osc. (6.3 Mc.) and doubler, 6V6 dblr., 807 dblr., and 807 final into a full wave doubler. Ern is not yet satisfied with his receiver which is a two channel I.F. job using an 1852 and 6K8 in the first converter portion.

Most active on the band appears to be 3YS, 3ABA, 3HK, 3BD and 3IZ, the latter being one of the most regular. Rex runs 25 watts to a T55 at present and is a good contact for Melbourne stations. 3MJ is still very tied up with work but manages to keep in touch with activity on the band by putting in an appearance at weekends.

The field day held on Sunday, 16th February, was the most successful yet held, a feature of the occasion being the excellent relaying of 3WI by 3MJ. A 50 Mc. receiver at 3WI enabled Eric (3BD) to listen in to the portable stations and he broadcast to them via 3MJ. Having the official WIA station operating in this way on the 50 Mc. band was very fine business.

Stations out were 3IZ near Mornington, 3YS at Macedon, 3HK Mt. St. Leonard near Healesville, 3ABU near Geelong, 3IV Mt. Buninyong, 3ANW Mt. Dandenong, 3WD near Ballarat.

The longest contact was between 3IV and 3HK almost 100 miles and many contacts were made between all the stations. Full details would take too much space to describe. During the afternoon 3AMP, in Colac, heard 3MJ and 3HK we believe, but full details are not yet to hand. 3WC was running continuous tone signals during the afternoon but was not heard by any of the stations. The next field day is to be held on 23rd March, the locations have not yet been arranged except for that of 3ANW which will be Mt. Buller.

Activity on 136 Mc. is gradually increasing. 3NB is now operating there using a pair of HY615s in a linear oscillator and a separately quenched super-regenerative receiver. The writer has contacted him several times and signal strengths are good. 3UJ is also very interested. However most of the 50 Mc. stations are waiting to see how DX conditions on that band go before undertaking much work on the higher frequency. 168 Mc. promises to be well investigated during the winter months. 3NB, 3UJ, 3MB, 3TZ, 3YS and 3NW have all contributed something to the band

and 3KU, 3LW, 3YJ and several others are making plans which should come to fruition soon.

TASMANIA

7CW and 7NC have both succeeded in contacting VK2 on this band. Great was the excitement one afternoon when the band burst wide open and QSOs were had by 7CW and 7NC. Congratulations to both of you and we hope to hear more from you in the near future.

QUEENSLAND

This will be very easy—there aren't any. Well more or less anyway because with 50 Mc. dead and only two hardy souls active on 168 Mc. things are only middling. Most of the locals have been tidying up their rigs, and one or two of them have committed the unforgivable sin of doing a bit of operating on 14 and 7 Mc. The QRM on those bands serves to make a fellow appreciate 50 Mc. a bit more anyway.

There is one item worth mentioning in passing and that is that VK4KB made his debut on the band by working VK4XG. No southern signals whatever have been heard, so there is really nothing else to report.

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DIVISIONAL NOTES

NEW SOUTH WALES

Secretary: Peter H. Adams, XV2JX, Box 1734 G.P.O., Sydney.

Meeting Place: Science House, Gloucester and Essex Streets.

Meeting Night: Fourth Friday of each month.

The Field Day held at Wyong on Sunday, 26th January, was a success and appeared to be thoroughly enjoyed by the 85 members and friends who attended. First event was the morse receiving contest. A special disc was recorded and presented by the gramophone company. Appearing on the disc was the story with sound effects of a mythical field day, plus five letter code groups. It was some mixture and the winner copied 21 out of a possible 37 code groups. VK2CZ took out the prize of a pair of 807s, presented by Philips. Second prize with 20 code groups copied correctly was won by VK2ZC, who received an 807 donated by the A.W. Valve Co. Other prizes were won by 2NP, thermocouple R.F. meter, donated by Prices Radio; and 2ZC (yes

again), two 5V4G valves, donated by Philips.

The Wyong gang made such a good job of hiding the transmitter that after two hours of operating (on 7 Mc., call sign VK2WI), the transmitter was still undiscovered. The surrounding hills did an excellent job of deflecting and generally scattering the signals. Bearings seemed always to point to some rise or another. It was the first time in Wyong field day history that the transmitter was not found and it looks as if we will revert to either 3.5 Mc. or one of the U.H.F. bands for the next do.

Harry Caldecott (2DA) is acting as State Traffic Manager, in lieu of 2VN, at present in U.S.A.

At the special meeting held on 13th February, N.S.W. agenda items were formulated and these, together with those from other Divisions, will be listed in "Amateur Radio."

The normal monthly meeting will be held on 28th February and Peter Adams (2JX) will lecture on "Modern Battery Design." The record played at the field day will be run and prizes awarded for those that can copy the most code groups.

Congratulations to the VK2 gang that carried off nearly all the prizes awarded in the 1946 Australian DX test. (Roy might have let the VK3s take the lot.) The Newcastle and

Coalfields took out nearly all the sectional prizes, while three Sydney stations won the first three places in the open contest. Dave Duff (2EO) won the test using only a zepp erected the afternoon before the contest started. It was a nice showing for the VK2s.

Some Ktals are to hand from Disposals and further supplies are anticipated, full details of handling will be covered in the "Bulletin."

Don't forget the March monthly meeting on the 28th, when your delegate will be instructed how to vote on the Federal Convention agenda items. Come along and air your views.

COALFIELDS ZONE

All that attended the Wyong Field Day voted it a big success and expressed the idea that a lot more should be run along similar lines.

One thing that could be improved in the minds of the Coalfield gang, would be better arrangements for the entertaining of the ladies, while the menfolk are searching for hidden transmitters. Possibly a spot of sport could be arranged. They were generally pleased with the outing and their attendance at future Field Days is pretty well assured.

Conditions generally are patchy, 28 Mc. has quietened down for Europe and 14 Mc. is a mixture of



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good and bad days. 7 Mc. satisfactory when QRM permits. 3.5 Mc. will be an attraction in a couple of months.

2TY has not been heard of lately. — 2OG, Keith, going strong on 14 Mc., lots of good DX with zepp, and is building a new home in the Maitland district and hopes to settle in shortly. — 2YO, George, is active on 14 and 7 Mc. with hopes of going on 28 Mc. Has been experimenting with some earthing ideas. — 2XT active again after many years. Bill is on 14 and 7 Mc. Hopes to erect a mast with 28, 14, and 7 Mc. rotary beams. — 2LB inactive, often seen building with bits of this and that—that could eventually be a rig eh! — 2KZ exclusively on 28 Mc. Max believes in personal chats with local hams and is a sticker for local get-togethers. Telephony doing a good job, and has a rotary under way. — 2MK not very active, operating 28 Mc. fone only. Rig is giving trouble at moment. — 2PZ is QRL and only gets on at week ends. Has a receiver for the other bands nearly ready and we should hear more of Chris in the near future. — 2ADT, Jack, still going strong. DX is piling up, 50 countries on 28 Mc. fone, 80 countries all told. Two sets of half waves in phase on

14 Mc., a long wire zepp for 7 and 3.5 Mc. and the old faithful three element on 28 Mc. W.A.C. while on holidays with 3 watts, nice going. — 2YL relaxing after working 101 countries post war, all on 28 and 14 Mc. (nice work Harry). The tally for 28 Mc. is 62 countries, 14 Mc. is 72 countries.

NEWCASTLE DISTRICT ZONE

There was a very good attendance of Hams from this district at the Wyong Field Day. The work of the W.I.A. executives and the Wyong gang was much appreciated. No doubt some of the boys have given a lot of thought to the question of D/F loops on 7 Mc.

2ZC has not been very active of late. Jim collected two prizes at the Field Day. — 2AHA busy with a new rotary. — 2BZ doing good work on 50 Mc. and getting nice reports from Wyong and Sydney. — 2AMG doing good work with a rotary on 14 Mc., recently burnt out his power supply. — 2KB still chasing South Americans on 14 Mc. fone, nice to see him at the Field Day. — Ernie, 2FT, still on 28 Mc. and DX no problem with the elevated rotary—much easier than those old spark days Ernie. — 2PE has had very nice DX contacts

with his two element rotary from Charlestown. — 2CS has a receiver going, may be on the air shortly, but still living up to the traditions of the "silent service." — 2XQ, very quiet, but busy with new gear. — 2LV busy with his transmitter, should be on soon. — 2XK inactive, but hopes all gear to be serviceable for winter months. Quite a few country Hams will concentrate on 3.5 phone this winter. — 2HC working QRP fone on 3.5 Mc., but threatened to load up his alphabetical tube (DETISW) shortly.

SOUTHERN ZONE

Jim, 2GG, returned from holidays with some bargain gear, ex-disposals. A good receiver is just around the corner. — Arthur, 2AP, was in Albury for a few days stopping with 2OJ and he re-sorted his gear after six years. Still in the R.A.A.F. and may not be out until 1948. — Dick, 2APW, on the war-path with new receiver with 1900 Kc. L.F.s, but gain disappointing. Worked few on 14 Mc. using 2GG's receiver. Is rather disappointed with lack of co-operation of VKs not answering calls to get reports on his new transmitter

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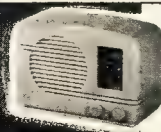
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— Noel, 2OJ, not satisfied with his receiver on 28 Mc. and intends rebuilding with 1852 R.F. and 6K3 mixer. Would like to receive notes from other Southern Zone Hams. QRA: Box 54, Albany. — Jim, 2ANQ (ex-3NQ) building a rig and expects to be operating soon.

VICTORIA

Secretary: A. B. D. Evans, VK3VQ, Box 2611 W.G.P.O., Melbourne.
Meeting Night: First Wednesday of each month.
Meeting Place: Radio School, Melbourne Technical College.

TECHNICAL ADVISORY COMMITTEE NOTES

Most of the time this month has been devoted to Bush Fire Auxiliary. Reg Bush (Divisional Organiser) and Secretary spent quite a lot of time in the offices of Radio Inspectors and Chief Officer of Country Fire Authority, thrashing out various problems associated with formation of Auxiliary and the allied Rural Scheme. We are pleased to be able to report that by courtesy of R.I., R.A.A.F., and Civil Aviation Authorities licenced amateurs in Victoria associated with the Auxiliary are permitted to use 3492 Kc. and second harmonic 6984 Kc. These frequencies are only to be used for actual emergency communications or exercises under the control of Divisional Organiser. The major value of these frequencies is the fact that being just outside the lower frequency end of each band, additional capacity, etc., can be incorporated very readily in any rig.

The Chairman of this Committee is the Technical Director of the Division and as such controls the technical policy of the magazine. The Technical Editor being responsible for correlation of information and its publication under the direction of Magazine Editor. The T.A.C. is at present conducting a drive to improve the Magazine technically, and needs your help. Unless the technical articles are sent in by YOU and YOU—well the Committee cannot assist the Technical Editor to fill the Magazine. Don't sit back and leave it to the other fellow. Members of the T.A.C. are doing their best to supply technical items themselves but we feel that there are many members in the Institute who could, if they applied themselves to the task, provide some very interesting and informative articles. What about it chaps?

Under the heading of Technical Jottings we hope to present some useful information in the form of short paragraphs. Here again your assistance will be appreciated. Shoot them along and we will fix them.

QUEENSLAND

Secretary (acting): F. Nolan, VK4JU, Box 638 J, G.P.O., Brisbane.
Meeting Place: State Service Building, Elizabeth Street, City.
Meeting Night: Last Friday in each month.

January was a month of resignations for the VK4 Division, for at the January general meeting, Keith Schleicher relinquished the position of President, while Bob Campbell tendered his resignation as Treasurer. A vote of thanks was moved, thanking 4KS and 4RC for their services during troubled times and carried with acclamation.

Bill Argeat then took the chair, and after the usual nominations (and declinations) Arthur Walz (4AW) offered to carry on the job as President, and like-wise Herb. Sprenger consented to keep an eye on Finance. Both of these positions will however be put up for auction at the forthcoming Annual Meeting early in April. I might say that we are hoping for some keen bidding.

For the benefit of country chaps who may not have the dope, we want to advise that Harry Angel operates VK4WI on Sunday mornings for the purpose of passing along the latest and in turn finding out what you fellows have been up to. Time is 1000 and the frequency is 7100 Kc.

VK4 COUNTRY NOTES

4OK, Jack and George, have given up the QRN band (7 Mc.) and doing FB work on 14 Mc. — Charlie (4CU) going great on 7 Mc. Did some nice portable work with 4DQ at Redcliffe recently. — 4LN, "The Voice of Gympie,"—Barry uses E.C.O. but still looking for the quiet spot on 7 Mc. band. — 4BJ, 4UX and 4PG—the Bundaberg gang—have no trouble with QRM from each other as 4BJ rules 7 Mc., 4UX is the 14 Mc. king, and 4PG sticks to 28 Mc. FB arrangement O.M. — 4XJ is a newcomer to Bundaberg. Les puts out nice signals on 7 Mc. New QRM for 4BJ. — 4RU (Roy) and 4OW (Lloyd) have started operation from Mackay. Nice CW signals from these boys. — 4HZ, the FS6 expert from Gympie, has been very quiet lately. What's doing Jim? — 4SN tried several beams. Only one type to go now and that is a W8JK. Getting together some good dope on beams from actual experiment and would like to hear from others who have been experimenting with beams.

No news from the Tablelands this month. What are you doing up there chaps?

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Now that the Christmas holidays are over what about more news from the country chaps? Monthly circulars will be around again, as this appears in "Amateur Radio," so if you haven't got yours let me know. Keep in touch with 4SN by letter or QSO and let him know what you expect in the way of W.I.A. service. Listen to VK4HA on 7 Mc. Sunday morning or contact VK4SN on 7150 or 7080 Kc. fone or CW. VK4HA is on 7100 Kc. approximately.

SOUTH AUSTRALIA

Secretary: E. A. Barbier, VK5MD,
Box 1234 K, G.P.O., Adelaide.

Meeting Place: 12 Waymouth Street,
Adelaide.

Meeting Night: Second Tuesday of
each month.

A visitor here for the fourth time
Mr. Neil Templeton (VK3HG).
With 96 countries in his DX list on
14 Mc. since licences re-issued he has
been an interesting Ham to meet personally.

CP1AP, Bolivia, was heard working
VK5FL last Sunday, at 1930 hours,
and is anxious for VK5 contacts. Frequency
is 14010 Kc. and he will be on
the air every Sunday evening.

Mr. F. K. McTaggart (VK3NW)
was a welcome visitor at the U.H.F.
meeting on Wednesday and gave the
members present an interesting side-
light on VK3 activities.

The Hon. Secretary of the W.I.A.
South Australian Division would appreciate
the present QRA of ex-VK5SL.

Mr. "Doc" Barbier (5MD) has been
appointed delegate to represent VK5
at the conference to be held at Federal
Headquarters during Easter.

Several members of the W.I.A.
have expressed appreciation of the
frequency checks being handled by
Mr. F. Wreford (5DW). A number of
non-members have availed themselves
of this W.I.A. service, and intending
new members may secure full
information re subscriptions, etc.,
from Box 1234-K.

VK2ANE (Mr. Eric Sherlock),
whose station is aboard the S.S.
"Chertsey" at present in Spencer
Gulf, has been contacting many VK5
amateurs during the month. Eric is
one of the radio officers aboard the
"Chertsey" and when off duty operates
his amateur transmitter on 14
Mc.

VK6RR has shifted frequency to
7195 Kc. for W.I.A. broadcasts on a
Sunday morning at 10 a.m.

It is officially announced that the
following are the members of the Advisory
Council for 1947: Messrs. E. A. Barbier
(5MD), R. V. Galle (5QR),
W. L. Pearn (5RN) and J. M. Stratford
(5JS).

Mayo Richards (5WR) is recuperating
at the Convalescent Home, Magill,
and Ted Cawthron (5JE) underwent
an operation at Daws Road Military
Hospital. Visitors will be welcomed.

Unfinancial members of the W.I.A.
are advised that provision is made in
the constitution for the readjustment
of subscriptions due to hardship, etc.

Written application to the Hon. Secretary
will bring full information.

The February monthly general
meeting took the form of a screening
of technical films dealing with Radar.
More than 100 members were present
and thoroughly appreciated the films.
Mr. John Allan (5UL) made the
screening possible, and also gave a
short description of the apparatus
used in the films. The members present
enthusiastically supported the
vote of thanks already proposed by Mr.
Roy Cook (5AC). Our thanks are
due to the Shell Company for the
use of their theatre and the opportunity
of viewing Adelaide by night
from the roof of the Shell Building.

The attendance at the meeting of
U.H.F. enthusiasts held on Wednesday,
29th January, was somewhat
disappointing when viewed in the
light of the enthusiasm displayed at
recent gatherings for U.H.F. boys. Be
that as may, those present seemed to
enjoy themselves and unquestionably
these informal meetings help to bring
the boys together and the personal
contact helps each "Ham" to appreciate
the other's viewpoint. It was
unfortunate that the Field Day was
handed back to Council with the
information that the U.H.F. boys were
not prepared to organise anything, as
Council are too busy with W.I.A.
business to handle such a big thing
as a Field Day. The Field Day has
now lapsed for want of enthusiasm
and the trophies will be disposed of
in such a manner as will be decided
by Council.

In regard to the Shell Theatre
visit, it was not necessary for five
members to step out of the lift to
make room for me as someone suggested,
also when the lift stopped on the
second floor by mistake, and
everybody marched out like a lot of
sheep, why did they blame me?

Noticed Wykeham Bayley looking
with awe at the Shell Beacon and he
was heard to remark, "What you
want is a vertical, Brudder."

Stations heard in VK5 on 14 Mc.
this month included HZ1AB, KH6BS,
VQ6HOS, CR9AN, XE1CK, PK2AA,
C2PL, XAAJ, HB9DU, F4AB, XE1AC,
G3BJH, CO6BD, T2ICM, CR7VAL,
VS7IS, KA6SA, VS1AE, ZS6BU,
U8AA, VS1AM, ZS8CI, SM5UM,
I1SV, HA4EA, SV1RX, VQ3HJP,
and ZS8HH. On 28 Mc., where
conditions have been patchy this month,
signals heard included KH6GP,
J9AAI, VS1BJ, G2CDI, XZ2GP,
F8TU, G4PF, G8IL, VETEL, TG8JW
and W1HEN (Maritime mobile).

VK5HG (Harold Cooper) was
heard on 28 Mc. on a recent Sunday,
slap bang in the middle of the fone
band which, needless to say, pushed
him around like nobody's business.

Glad to hear you on again Harold.

Heard 5BZ (Cec. Baseby) working
ZL on 14 Mc. There is no doubt about
it, Cec's persistence wins in the end.
My information came from 5FL who
did not tell me whether he heard
both sides of the contact!

It must have been gratifying to
Council and the retiring President to
hear the spontaneous vote of appreciation
to 5IT given by the members
at the general meeting. Members of
the Council, who can be pardoned

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at times for thinking that the great amount of work which they shoulder is perhaps not appreciated, probably will now realise that the average Ham is quite undemonstrative as a rule, but does at all times appreciate the good work on his behalf. The resignation of Mr. I. Thomas as President, is a blow to members and Council alike, but business reasons do not permit any reconsidering of the decision on the part of "Tommy." Any-way the best of luck to you and thank you for a job well done for amateur radio.

Mr. Hal Austin, M.I.R.E. (Aust.), ex-SBN, the newly appointed president is undoubtedly the right man for the job. Educated at Fulteney Grammar School, St. Peter's College and five years in the employ of the Municipal Tramways Trust fitted him for a position with Adelaide Radio, an electrical and radio firm which had the foresight to see the advantages of the new wonder "broadcasting." Hal's broadcast on Friday nights of Gilbert and Sullivan records was the highlight of early radio. Launching out for himself in the radio business, he established the present position he now holds in the radio trade. He realises fully the hard task ahead following in "Tommy's" footsteps, but with the loyalty of members and Council, Hal will face the future with confidence.

5CA, whose QTH is Darwin, has been heard on 14 Mc. with phone signals of good strength late at night. Attached to the interim R.A.A.F., he is coming home to Blackwood in the near future, and is looking forward to meeting some of his VK5 contacts personally.

The half hour ruling on QSOs came up for discussion at the last general meeting and seldom has such a unanimous decision been arrived at. The meeting decidedly agreed that the present ruling is a good one and that no attempt should be made to alter it. It is realised by all that no attempt has ever been made to interfere with genuine tests or discussions but that idle chatter during DX times, etc., must be controlled.

The programme side of the general meetings in VK5 has reached an all time high lately, and Council must be hard put to maintain the high level.

TUBE HEATER CIRCUIT OPEN

Before discarding tube try applying hot iron (soldering type) to the heater pins. Dry joints occur even in tube pins. This fault has been experienced mainly with 866 rectifiers.

TASMANIA

Secretary: J. Brown, VK7BJ
12 Thirza Street, New Town.
Phone W 1328.

Meeting Place: Photographic Society's Rooms, 163 Liverpool Street, Hobart.

Meeting Night: First Wednesday of each month.

The general meeting was held on Wednesday, 5th February, at 8 p.m., and those present were 7LJ (in the chair), 7BJ, 7OM, 7CT, 7CJ, 7TR, 7RF, 7CW, 7MY, 7LE, 7ML, 7GR, 7RY, 7DW, 7AL, 7DH and Messrs. Allenby, Fulton, Brown, Durkin, Lipscombe and Watson (2). Apologies were received from 7PA and Mr. Koglin. The general business was handled in the usual expert style and among other things the correspondence regarding the proposed regulations of the Australian DX Century Club came in for a lot of lively discussion among those present. The pet hobby horse was the part where QSLs were needed as a verification of the authenticity of the claim. One old hard-head was heard to remark, "Yeah, I've lost 'em like that before!!!" Oh well, we'll see.

It would appear that the VK6 gang are trying to educate their local politicians! What an undertaking. It appears that a couple of the local Senators visited a local shack, under guard, and were astounded at what went on—even professed complete ignorance in Amateur Radio generally! How many others of the clan are the same way?

Four more new members have been added to our list and comprised one full member and three associates. They were Len Edwards (7LE) and Messrs. D. H. Watson, M. J. Watson and O. L. Brown. Welcome, and pleased to meet you all.

Quite an amount of voice was given to the growing prevalence of the useless ragchewing which is growing in the recognised DX bands. It's quite a common occurrence to hear a short cross-town QSO in the middle of what would be a decent DX session. Excuses can be held for legitimate tests, but for some of the rot that is exchanged—well.

Another bone of contention is the indiscriminate use of the V.F.O. Several of the local lads have had excellent DX QSOs broken up by some band-hog who hears a bit of juicy DX on the air working someone and will deliberately—yes, I say deliberately—shift their rig right on top

of the DX and proceed to call him. Does this show that the Amateur game is degenerating or is it through lack of thought? I wonder

A very FB Field Day was held one sunny Sunday just recently and judging by the amount of bouquet slinging, the gang had a really excellent day. QTH was Snug Beach. "Doc" Kelly (7LL) was the xmitter party—he's almost a party, you should see his waistline—!!! and made an excellent job of locating the rig.

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as most of the lads were tricked by spurious bearings from a local pile at Electrons.

7CW was first to locate the rig, but as he had not complied fully with the rules, he declined to take the honours. Honesty is the best policy eh, Crosby? 7BJ was second in, in the "Red Terror," and copped the prize. By the way, what was the prize Joe? 7LJ and 7TR were teamed and were third on the scene, after 7TR had left a lump of his hide on

an old stove somebody had dumped. Too old even to step over a heap of junk eh, Ray. Congrats to the place getters and to all those who joined to make the day so very enjoyable.

A meeting has been arranged with the Northern Gang to take place on the 22nd of February at Launceston. A bumper meeting and a good trip is expected by the local gang. Plenty of pubs along the road too!

We will be ably represented this year at the Annual Convention by our worthy Secretary, 7BJ. He is also Federal Councillor for VK7, and therefore, should be well equipped to do justice to the big job ahead of him. Good luck Joe.

It was decided to hold another Field Day on Sunday, 16th March, with the same rules applying. In this instance 7AL is to have the Xmitter and is working hard on a decent location to keep the wolves out. See you at the Field Day.

To wind up a very successful meeting we were regaled with a few anecdotes on his experiences during his war service by 7LE (L. Edwards) who was with an A.B.C. unit. He had quite an amount of interesting Japanese gear, most of which caused the boys to open their eyes and to wonder whether they would be able to secrete any of it from the alert eyes of the owner, Len. Many thanks OM. By the way, 7BJ is looking for the next lucky victim—who will it be? Have your answer in to the Secretary at least 7 days before the next meeting and see what happens to you!

MODULATION CHECKER

These figures are given on the assumption that there is negligible distortion in the A.F. voltage taken from the last stage in the speech amplifier, also that the phase shift between the A.F. voltage and the voltage modulating the R.F. amplifier, is negligible. The R.F. voltage is obtained by a pick-up coil consisting of a couple of turns of wire. This coil is placed near either the modulated amplifier tank coil or near the aerial coupler.

About a 50 volt amplitude is required for the audio or R.F. voltage to give a satisfactory deflection on the screen of the oscillograph. It is IMPORTANT to turn the INTENSITY control back to zero before the voltage is removed from the deflecting plates, otherwise a spot may be burned on the fluorescent material of the screen.

DIRECT DISC RECORDING

traversing mechanism whereby the pivot about which the cutting head pivots in a vertical plane can be raised or lowered slightly, relative to the disc, preferably by means of a screw. In this way, small variations in the cutting angle can be effected while cutting is in progress.

The second adjustment has a large effect on the ease with which the swarf is controlled. The requirement is that it be thrown well clear of the stylus as it leaves the disc, after which its natural shrinkage will cause it to gather in a tidy circle just inside the track, as mentioned earlier. The shrinkage effect is normally not sufficient to do this, and there is the need to introduce a slight angular "bias" on the stylus cutting face to bring about the "throwing" effect. Rotating the stylus slightly in the chuck of the cutting head would be a possible way of doing this, but it is a clumsy method and difficult of fine adjustment. In any case it is usually foiled by the presence of the clamping "flat" on the shank.

A far more satisfactory way is to advance the cutting head slightly, relative to the traversing mechanism, so that instead of the stylus travelling along a true radius of the disc when moved by the leadscrew, it moves instead along a parallel line slightly forward of it. The amount of forward advance required is between $\frac{1}{8}$ -inch and $\frac{1}{4}$ -inch, depending on the maximum diameter of disc to be used, and its speed of rotation, and can best be determined by trial. This slight departure from the theoretically correct condition makes no detectable difference in the groove shape, or in the quality of reproduction.

The term "Point Feeling" has been coined to describe a habit that some recordists have of determining the existence of modulation at the cutting head by touching the stylus tip with the fingers. The practice is to be deprecated, as apart from the risk of accidental mechanical damage to a sapphire, the presence of perspiration on the fingers can dull the cutting edges of a metallic tip. If done at all, only the lightest of pressures should be used against the front of the stylus shank, and not the actual cutting surfaces.

The final chapter in this series will deal with some aspects of the various discs used for Instantaneous Recording.

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TAMING AN 807 . . . THIS COULD HAPPEN TO YOU!

By C. G. HARVEY, VK3UO*

This is some of the story of the first trials of a beam pentode at VK3UO. Just before the war, there was ample reason to believe that the day of the easy to drive medium power R.F. tube was approaching. For instance, the old 6P6 looked a good thing until displaced by the 6L6G, in its turn to be displaced by the 807.

War saw the large scale practical employment of the beam tetrode, probably because of the need to reduce not only transmitter size and weight, but to build them in the fewest possible man-hours. Some of these transmitters, as we know to our cost, were dismal failures, others were honeys.

The fact remains that several countries in the world produced one or more successful transmitters in which

beam tubes like the 813 or the 807 did a man-sized job.

Any Ham that had dealings with these transmitters could hardly have failed to want to polish up the circuits, raise the efficiency, put up a decent antenna, with a decent coupling system on the end, and see what would happen. The promise of a reduction in cost per watt for this ideal, appears just the thing for the inflated pocket, and the promise of a match-box sized transmitter instead of a 6-foot rack and panel may be some of the reason why so many Hams today are using the beam tubes.

Many articles have been written about these tubes and their peculiarities. Nevertheless, attempts by the uninitiated to resolve the enthusiastic propaganda and the complaints of the dissatisfied, is a problem that is unlikely to be solved easily without a fair technical background, a large Junk Box and a good hints and kinks department.

For those of you who have been able to make beam tubes do just what you wished first time on, this article is not for you. To the embryo Ham just starting off to work the world on low power and cost, there will be food for thought.

Before the war had really finished we had, like most other pre-war Hams, thought deeply about the first new rig, the underground couldn't confirm just what bands were going to be open first, so we built an 3.5 Mc. oscillator, ground a few appropriate Xtals, and then hotted up a decent all-band superhet. This was completed in time for the opening of 14 Mc., and by this time we had read a considerable amount of literature in search of gen on the beam tetrodes. In particular we had looked high and low for the dope on 807s because it was this tube that we had selected as the first post-war guinea pig.

Our first mistake was to consider that they would be really easy to drive as a P.A. In our innocence, we had thought that 3 mills. drive from an oscillator would be easy on 14 Mc., and any way if these tubes were as easy to drive as was thought, it wouldn't matter much anyway.

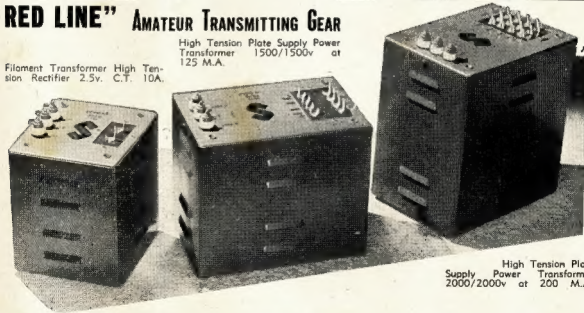
Symptoms such as uneven output near resonance, poor note, erratic screen current and a tendency to produce watery joes finally changed our minds.

*Flat 7, 13 Hughendon Road, East St. Kilda.

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To go back a stage, being pre-war E.C.O. fans, we had hoped to be able to drive the 807 direct from a simple E.C.O. with the grid on 7 Mc. and the plate on 14 Mc. We weren't going to spend money on meters unnecessarily and in any case the transmitter had to be small enough to stow away in a wardrobe in a flat. The new E.C.O. went along nicely with its plate supply obtained from the receiver. There was a separate 350 volts for the 807 plate supply and the 807 screen voltage was to come from the receiver supply.

Being a confirmed triode fan, we didn't place too much importance on articles stating that screen current was an important factor, and consequently we didn't provide a separate screen current meter.

We soon changed our tune though, when we found the off resonance plate current a bare 45 Ma. and the resonance current at no load 20 Ma. The investigation revealed that although screen current is reasonably steady, it rises at resonance, and unless the meter is arranged to read plate current alone, a false idea of the efficiency of the tank circuit can be obtained. (About this time we discarded the venerable pea lamp as a tuning indicator in favour of meter switching, and have never regretted the change.)

The corrective action in this case was to increase the screen current by raising its voltage, the conventional resistor from the plate supply did the trick, raising the screen current to 8 Ma. which is close to the maker's tolerance.

The thing to watch here is that no matter what conditions of tuning or loading apply, the screen current must not be exceeded, if it is you will finally lose your 807 in a blue glow like your YL's eyes and just as expensive.

The standing current off resonance now appeared much higher, in the vicinity of 80 Ma., and the resonance dip was more normal. Full of confidence however, we kept the grid current down to 1 Ma. under load and expected the world to answer the first CQ. It didn't.

About this time we had troubles with the note, which seemed OK unloaded. (Eventually we tracked this down to transformer lamination vibration, but not before a considerable amount of soldering, shielding and searching for additional filter chokes and condensers had gone on.) Our QSOs had not been numerous and the decision to increase the 807 plate voltage to its rated value was made.

Nothing much happened except that the keying tube got red hot, the 807 got red hot, and the note was worse. The QSOs were still VK and ZL. Then the coupling condenser (a mica one of a well-known brand) passed on, so we tried tuned grid input and very quickly discarded it.

We thought we knew some of the

trade secrets of operating 807s because we had the proverbial 50 ohms in the screen, we had sunk the tube socket well below the aluminium panel on which the whole transmitter was built, we had kept grid and plate leads short and well away from one another, all the by-pass condensers came back to a common point or points, the filaments were by-passed and the whole oscillator was shielded including the tube.

The trouble however, wasn't always parasites, but often showed up as jerky plate current dip at resonance and a poor note. Tuning was made difficult with this 550 volts on the plate because of the tube reddening up and the consequent risk of running it soft. In particular, joys appeared when ever tuning was attempted without any type of load.

About this time we began to think that 807s were the fiendish design of a sadistic R.I. who hoped to make one stick to the terms of his licence and really do a bit of experimenting. Our dreams of a small, cheap, efficient, low power transmitter were vanishing as we juggled shielding and by-pass condensers without avail.

A bit of thought and a re-check on some of the articles revealed the fact that most were using relatively high voltage on their Xtal oscillators and some had even seen fit to add a pea lamp in the Xtal circuit! This raised the doubt that our 1 Ma. of drive might be the root of our troubles. Accordingly, up went the oscillator voltage to 350 volts, down went the cathode tap and the grid resistor, and the 807 grew cooler. The note stayed rough so we tried some more and yet some more filter without avail.

The only trick in the bag seemed to be to raise the drive to the manufacturer's figure. "Who knows, 2 mills. isn't much and it may just do the trick!" Accordingly we relegated the 45 keyer tube to an odd corner, substituted the BCL 42 as a doubler, put the E.C.O. grid on 3.5 Mc. and the plate on 7 Mc. and presto a nice resonance dip and a cool 807, tons of R.F. in the tank, but still a poor note. This was improved a little by adding 8 mfd. right at the 807s screen.

Difficulties in obtaining suitable 600 volt working filter condensers precipitated the decision to go Xtal temporarily, and presto, the note improved a little more. We traced the original poor note to an almost imperceptible transformer lamination vibration when the key was down, and this also affected the joys when they were present.

Many of these problems apply in part to normal triode transmitter P.As., but in our opinion after 12 months rebuilding and experimenting, any one of the following factors could put you off 807s for life, for example. We believe that . . .

*Less than 3 Ma. grid drive is asking for trouble in a P.A.

*More than 9 Ma. screen current under any condition of tuning will finally cost you a new 807.

*A red plate may mean insufficient drive, and a red hot screen.

*The upper limit of plate loading is flatter than in a triode, consequently it is harder to exceed the rated plate dissipation. The screen suffers instead if you load the tank too hard.

*Don't fail to shield the tube up as far as the base of the elements, and in addition keep the driving stages beneath the metal chassis too. Bread-board layouts are best left to triodes.

*Don't plan to fit V.H.F. parasitic chokes unless all else fails. If proper construction methods are used they will not be necessary.

*Try and use decent insulation in the plate tank circuit and keep the efficiency, and Q, up.

*Invest a few bob in a meter and selector switch, it will run out cheaper than 807s and pea lamps.

*Watch the grid coupling condenser, because it is likely to lose its life when decent T.P.T.G. type oscillations start.

*Don't try and use tuned grid input circuits to the 807, they seem to be a prize source of T.P.T.G. type oscillations, which nothing sensible seems to cure.

*Transformer vibration may produce a typical poor note, particularly where there is a tendency to self oscillation. If you use E.C.O., keep the transformers away, or use solid anti-vibration engineering.

*Don't be surprised to get joys when the plate is unloaded, if everything is in order, they will disappear when a little load is coupled on.

*Don't try and neutralise the beast, start right in rebuilding a sound shielded outfit with short leads and cancelling coil fields.

*Don't waste time trying to grid key the tube. Screen or cathode is simple and effective.

*Don't blame me if your 807 writes "nurts" in lovely blue ink on its envelope.

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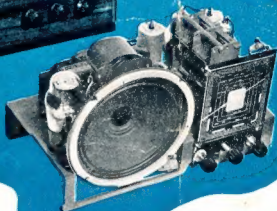
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